

**CLAIMS**

1. A process for preparing an olefinic hydrocarbon mixture comprising at least 5% by weight of mono-olefin oligomers of the empirical formula:



where n is greater than or equal to 6, said mono-olefin oligomers comprising at least 20 percent by weight of olefins having at least 12 carbon atoms, said olefins having at least 12 carbon atoms having an average of from about 0.8 to about 2.0 C<sub>1</sub>-C<sub>3</sub> alkyl branches per carbon chain, said process comprising contacting a feedstock comprising n-butene and propylene in a molar ratio of about 1:0.01 to about 1:0.49 under oligomerization conditions with surface deactivated ZSM-23.

2. The process according to claim 1, wherein said feedstock contains n-butene and propylene in a molar ratio of about 1:0.05 to about 1:0.35.

3. The process according to claim 1 or claim 2, wherein said ZSM-23 has been surface deactivated with a sterically hindered nitrogenous base.

4. The process according to claim 3, wherein said sterically hindered nitrogenous base is 2,4,6-collidine.

5. The process according to any preceding claim, wherein said oligomerization conditions include a temperature of about 190 to about 240°C.

6. The process according to any preceding claim, wherein said oligomerization conditions include a temperature of about 200 to about 230°C.

7. The process according to any preceding claim, wherein said oligomerization conditions include a temperature of about 210 to about 220°C.

8. The process according to any preceding claim, wherein said oligomerization conditions comprise a pressure in the range of from about 500 psig (3447 KPa (gauge)) to about 1500 psig (10342 KPa (gauge)).
9. The process according to any preceding claim, wherein said oligomerization conditions comprise a pressure in the range of from about 750 psig (5171 KPa (gauge)) to about 1250 psig (8618 KPa (gauge)).
10. The process according to any preceding claim, wherein said oligomerization conditions comprise a weight hourly space velocity of from about  $1.0 \text{ hr}^{-1}$  to about  $4.0 \text{ hr}^{-1}$ .
11. The process according to any preceding claim, wherein said oligomerization conditions comprise a weight hourly space velocity of from about  $1.0 \text{ hr}^{-1}$  to about  $3.0 \text{ hr}^{-1}$ .
12. The process according to any preceding claim, wherein said oligomerization conditions comprise a weight hourly space velocity of from about  $1.75 \text{ hr}^{-1}$  to about  $2.25 \text{ hr}^{-1}$ .
13. The process according to any preceding claim, wherein said olefins having at least 12 carbon atoms have an average of from about 0.8 to about 1.3  $\text{C}_1\text{-C}_3$  alkyl branches per carbon chain.
14. The process according to any preceding claim, wherein said olefinic hydrocarbon mixture comprises at least 20% by weight of said mono-olefin oligomers.
15. The process according to any preceding claim, wherein said olefinic hydrocarbon mixture comprises at least 85% by weight of said mono-olefin oligomers.

16. A process for producing a long chain alcohol mixture comprising contacting at least part of the olefinic hydrocarbon mixture produced by the process of any preceding claim with carbon monoxide and hydrogen under hydroformylation conditions and in the presence of a hydroformylation catalyst.

17. A process for producing an alkylaromatic compound comprising contacting an aromatic compound with at least part of the olefinic hydrocarbon mixture produced by the process of one of claims 1 to 15 under alkylation conditions and in the presence of an alkylation catalyst.

18. A process for preparing an alkylaryl sulfonate by sulfonating the alkylaromatic compound produced by the process of Claim 17.